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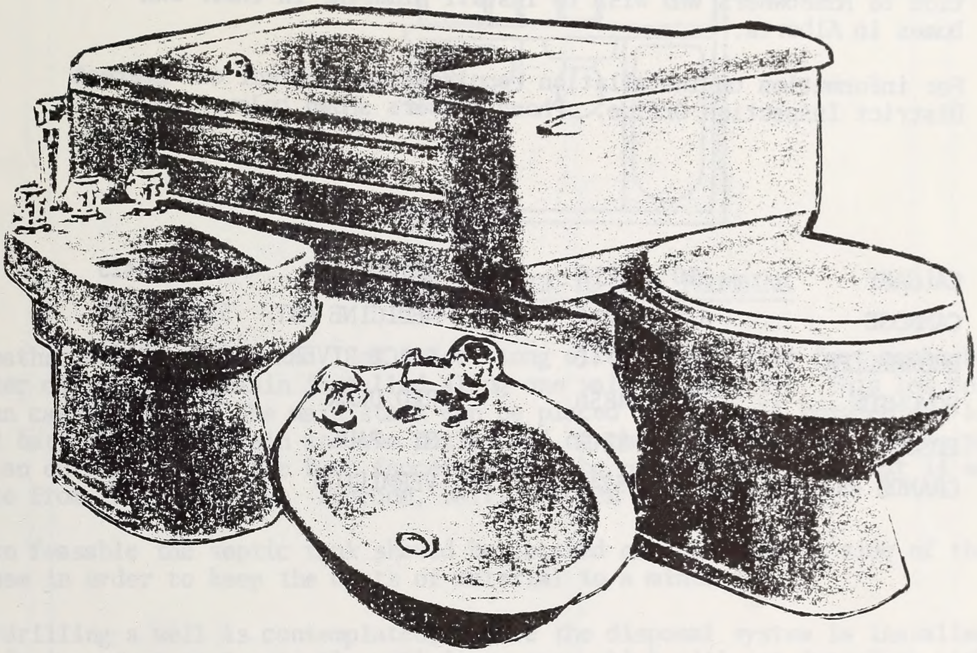
PLUMBING & GAS SAFETY SERVICES BRANCH

Plumbing Information for Residential Property Owners



Alberta
LABOUR
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Plumbing & Gas Safety Services Branch
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Edmonton, Alberta, Canada
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This pamphlet is compiled by the Plumbing & Gas Safety Services Branch, Alberta Labour, and it's purpose is to provide information to homeowners who wish to install plumbing in their own homes in Alberta.

For information on installation requirements, contact our nearest District Inspection Office. Phone numbers shown below:

CALGARY	230 - 4710	LETHBRIDGE	329 - 5423
CAMROSE	679 - 1214	MEDICINE HAT	529 - 3520
DRUMHELLER	823 - 5740	PEACE RIVER	624 - 6164
EDMONTON	427 - 4856	RED DEER	340 - 5157
EDSON	723 - 8202	ST. PAUL	645 - 6349
GRANDE PRAIRIE	538 - 5243	VERMILION	853 - 2811

HOUSE PLUMBING

A homeowner may install plumbing in his own home, but must first get a plumbing permit from the Plumbing & Gas Safety Services Branch, Department of Labour.

Where the kitchen is next to a bathroom, locating the kitchen sink and bathroom fixtures (bathtub, basin, water closet) back to back on the common wall reduces plumbing costs (Figure 1).

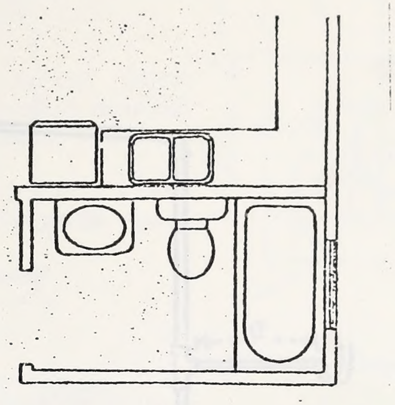


FIGURE 1 - BACK-TO-BACK PLUMBING

A bathroom 5 feet wide and 7 or 8 feet long allows for a five foot bathtub, a water closet and a basin installed along one wall (Figure 1). This low cost plan can be used if the main stack can be placed in the wall between the kitchen and bathroom. The basin and the outlet end of the bathtub should not be placed on an outside wall. The bath faucets should be placed in a wall that is accessible from the back, i.e. bedroom, hall, kitchen or closet.

When feasable the septic tank should be located on the bathroom side of the house in order to keep the costs of material to a minimum.

If drilling a well is contemplated, before the disposal system is installed, it is important to locate the well in an area which will not interfere with the placement of the disposal system.

SELECTION OF FIXTURES

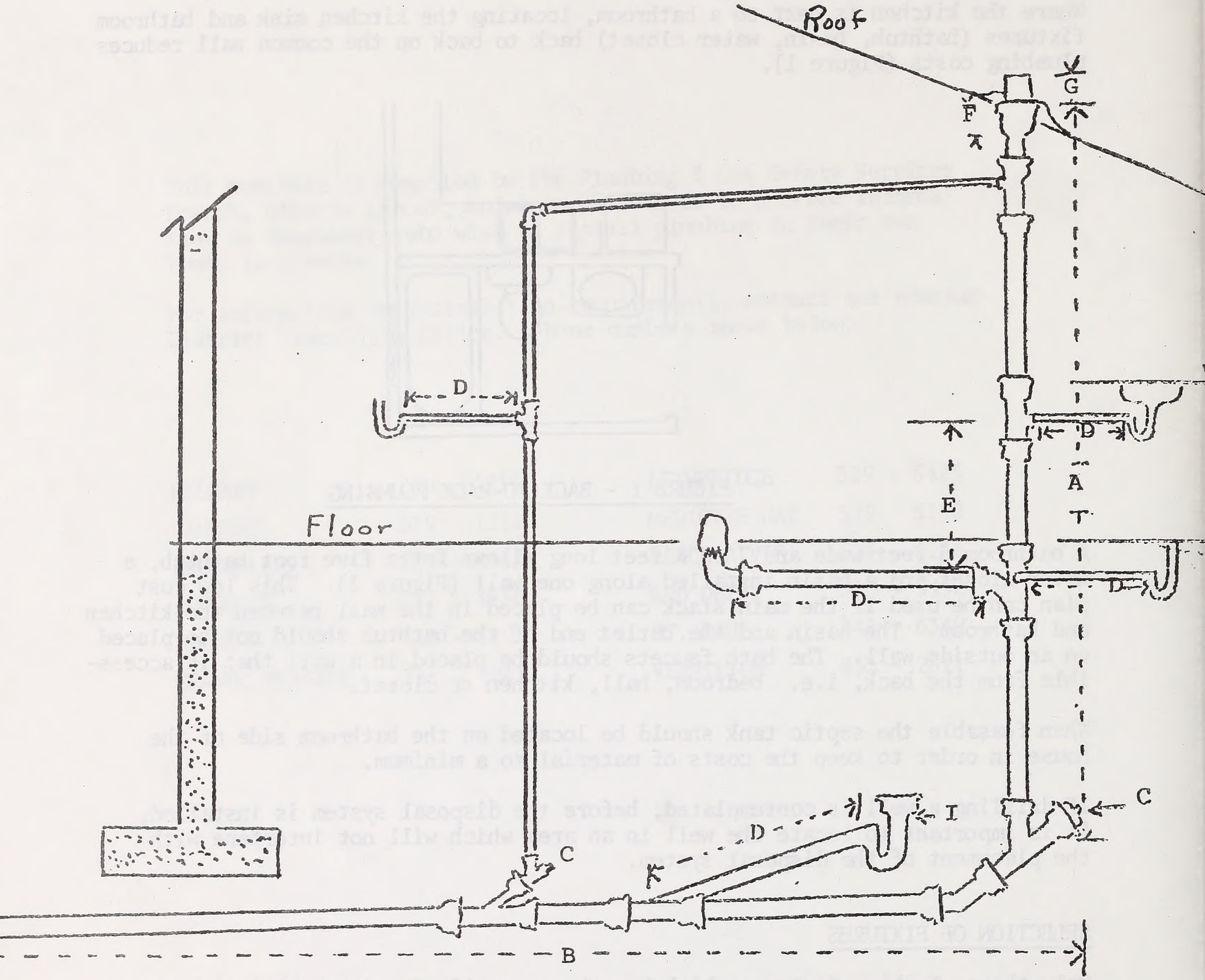
Only those plumbing fixtures which have been certified and labelled with the (CSA) Canadian Standards Association label may be installed.

PIPING MATERIAL

All piping material used in the plumbing system must be C.S.A certified. Information on acceptable piping material may be obtained from any plumbing inspector.

DEFINITIONS

FIGURE 2



A. Main 3" Stack - The main vertical waste and vent pipe in a plumbing system.

B. Building Drain - The lowest horizontal piping which conducts sewage out of building to sewer or the septic tank.

C. Clean Out - A removable plug or cap on a fitting which when removed will permit cleaning of a section of piping.

D. Fixture Drain - The pipe that connects a trap to its vent.

E. Wet Vent - A portion of piping used as a waste pipe for a fixture and also as a vent for one or more other fixtures.

F. Roof Increaser - A fitting to increase the size of any vent to 4" size at the roof.

G. Roof Ring - A piece of 4" pipe inserted into the roof increaser as an extension.

H. Flood Level - The point at which water will overflow from a fixture.

I. Floor Drain - A 4" deep seal trap set in a basement floor to receive water from the basement floor.

STEPS TO FOLLOW

Layout of Main Floor Bathroom

1. Try to layout your bathroom so that the wash basin will be located on the same wall as the 3" stack, as this will eliminate the need for a seperate vent for the basin, because the basin fixture drain always connects to a vertical "stack" above the floor. The toilet and bathtub fixture drain always connect to the stack below the floor, see Fig. 3 & 4.

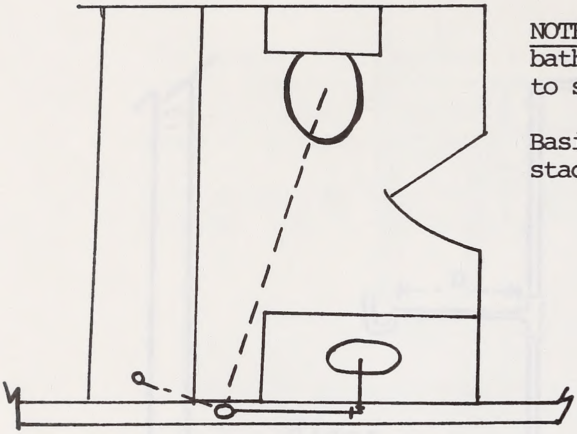
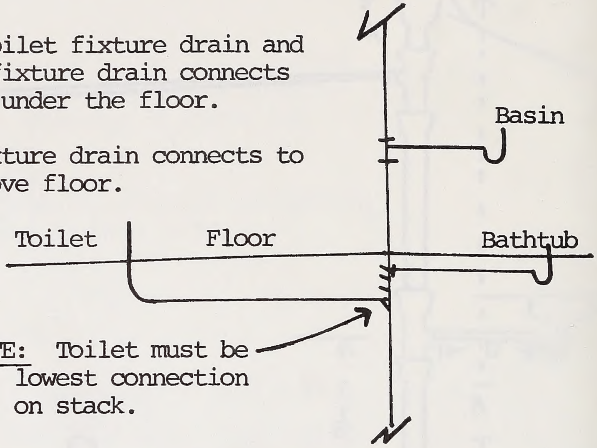


Fig. 3

NOTE: Toilet fixture drain and bathtub fixture drain connects to stack under the floor.

Basin fixture drain connects to stack above floor.



NOTE: Toilet must be lowest connection on stack.

Fig. 4

2. LAYOUT OF PIPING FOR STACK & MAIN BATHROOM

After locating the bathroom fixtures as outlined in Step 1 (Layout of Main bathroom), measure and mark on the floor, the spacing for each fixture to be installed. Allow the following amount of space for each fixture:

A - Bathtub - allow 30"
B - Toilet - allow 20"
C - Basin - allow 20" or the amount of space required for the vanity to be installed.

If all fixtures are to be placed side by side on one wall, the amount of space required would be a total of 70". A minimum of 4" spacing between fixtures is also recommended, therefore a total of 82" should be considered a mimimum wall length (see Figure 6).

If there is not enough room for all three fixtures on one wall, the toilet may be placed on the opposite wall as indicated in figure 3. You will note in step one, the basin should be on the same wall as the stack, see Figure 3 and not on an outside wall.

The next step is to cut holes in the plate (top & Bottom) for the 3" stack (see figure 2 & 13). The stack should be placed in the wall to one side or the other of the toilet, as this will simplify hooking up the fixtures (see figure 7). After cutting the holes in the bottom plate to accomodate the 3" stack a plumb bob should be suspended from this hole to basement floor level in order to centre the fittings for the base of the stack as outlined in step 3 (figure 5). A 4" diameter hole in the floor for the toilet stub should be cut 12" from the rough wall and centered on the toilet location (figure 7). A 6" x 12" hole in floor for the bath waste and overflow should be cut and centered at 15" from the side wall and against the plate.

Figure 6

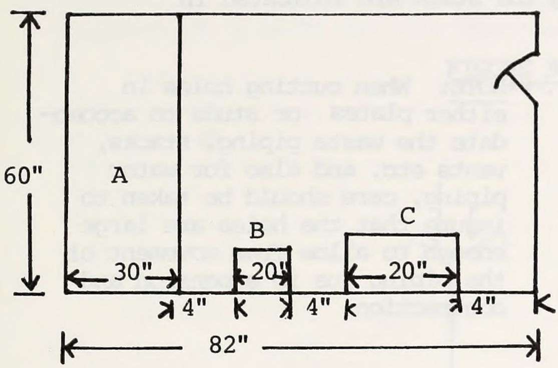
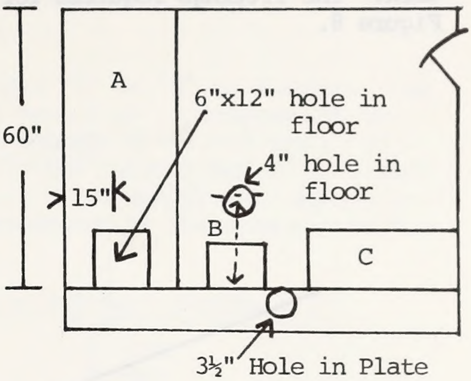


Figure 7



NOTE:

It is important to decide whether your bathtub should be a right hand (RH) outlet or a left hand (LH) outlet, which simply means the end of the bathtub you wish the drain to be on, eg: Figure 7 would require a LH bathtub.

3. LAYOUT OF PIPING FOR BASEMENT GROUNDWORK

After deciding on the location of all the basement fixtures and where the main stack is to rise vertically, the rough in should start with the building drain about one foot (1 foot) below the footing. Place all fittings which will be required for basement outlets, in their proper locations for completing the rough in. The next step is to measure the lengths of pipe which will be required to connect the fittings, see figure 5. After the pipe has been cut to proper lengths connect all fittings to the pipe. All horizontal piping should be graded at ¼" per foot.

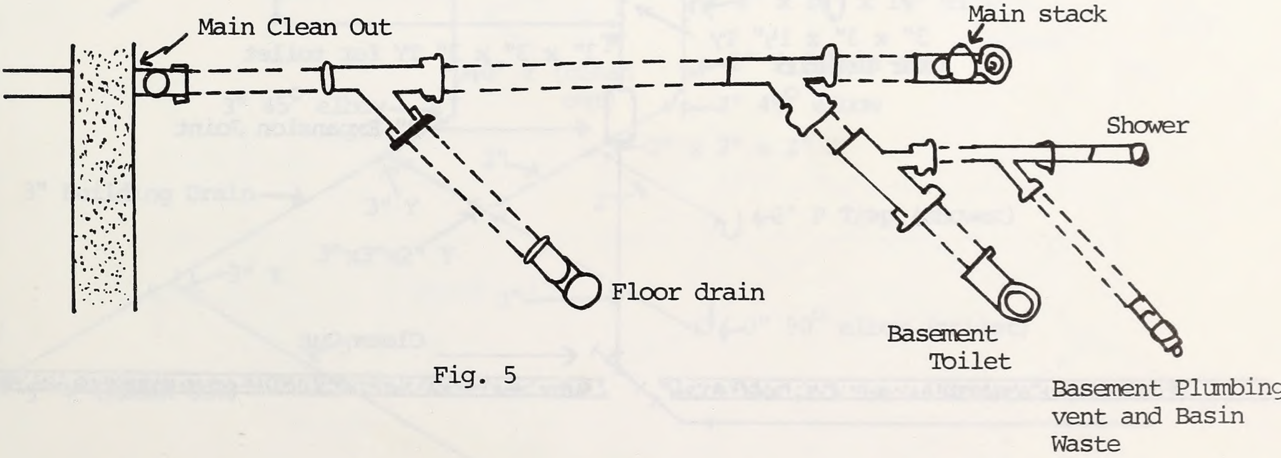


Fig. 5

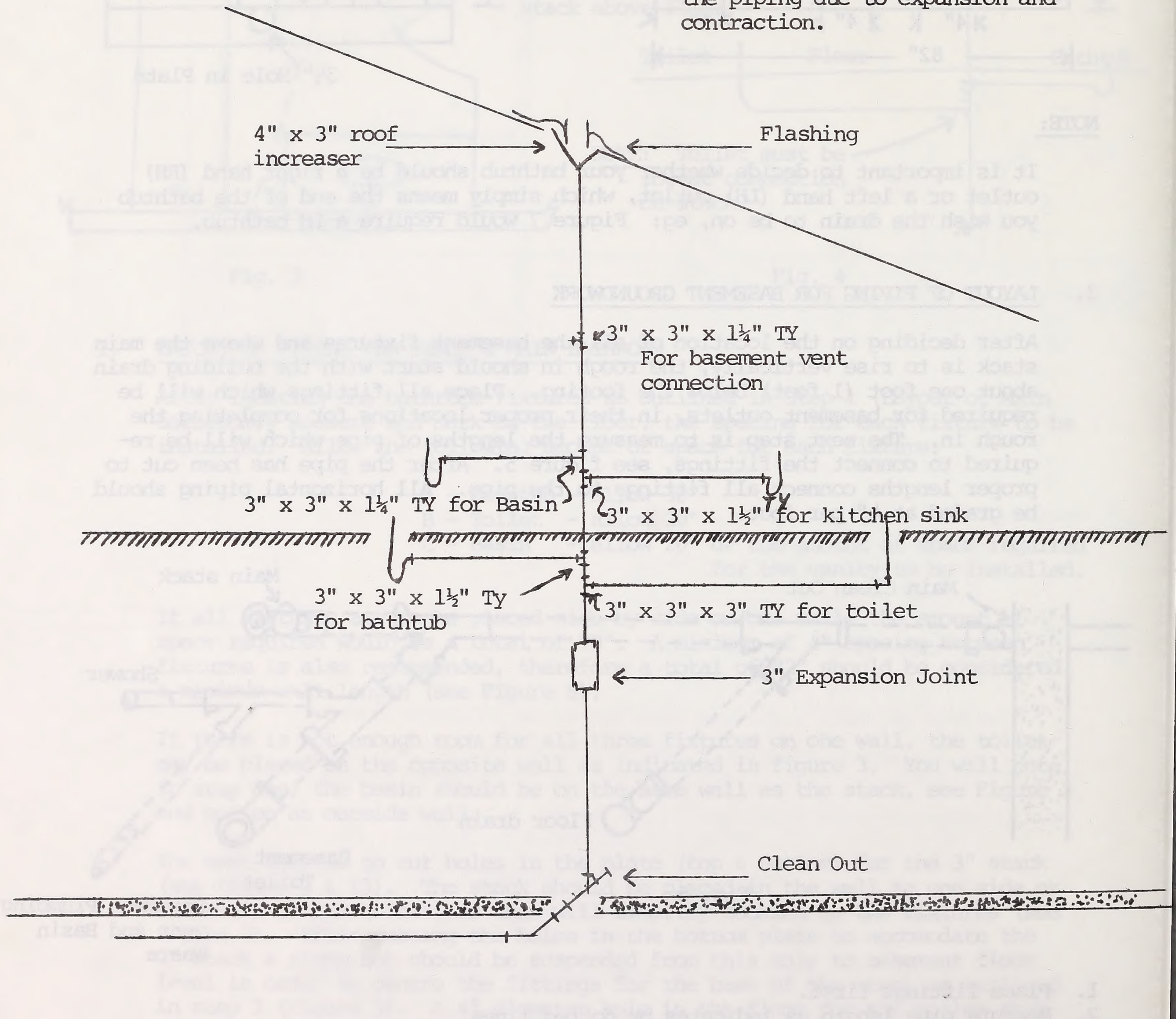
1. Place fittings first.
2. Measure pipe length as indicates by dotted lines.
3. Connect all fittings to pipe cut to proper lengths.

4. COMPLETING THE ROUGH IN

Completing the stack from the ground work up through the roof is the next step. Start the stack at its base, from the fitting in the ground work. The fittings required for completing the stack are indicated in Figure 8.

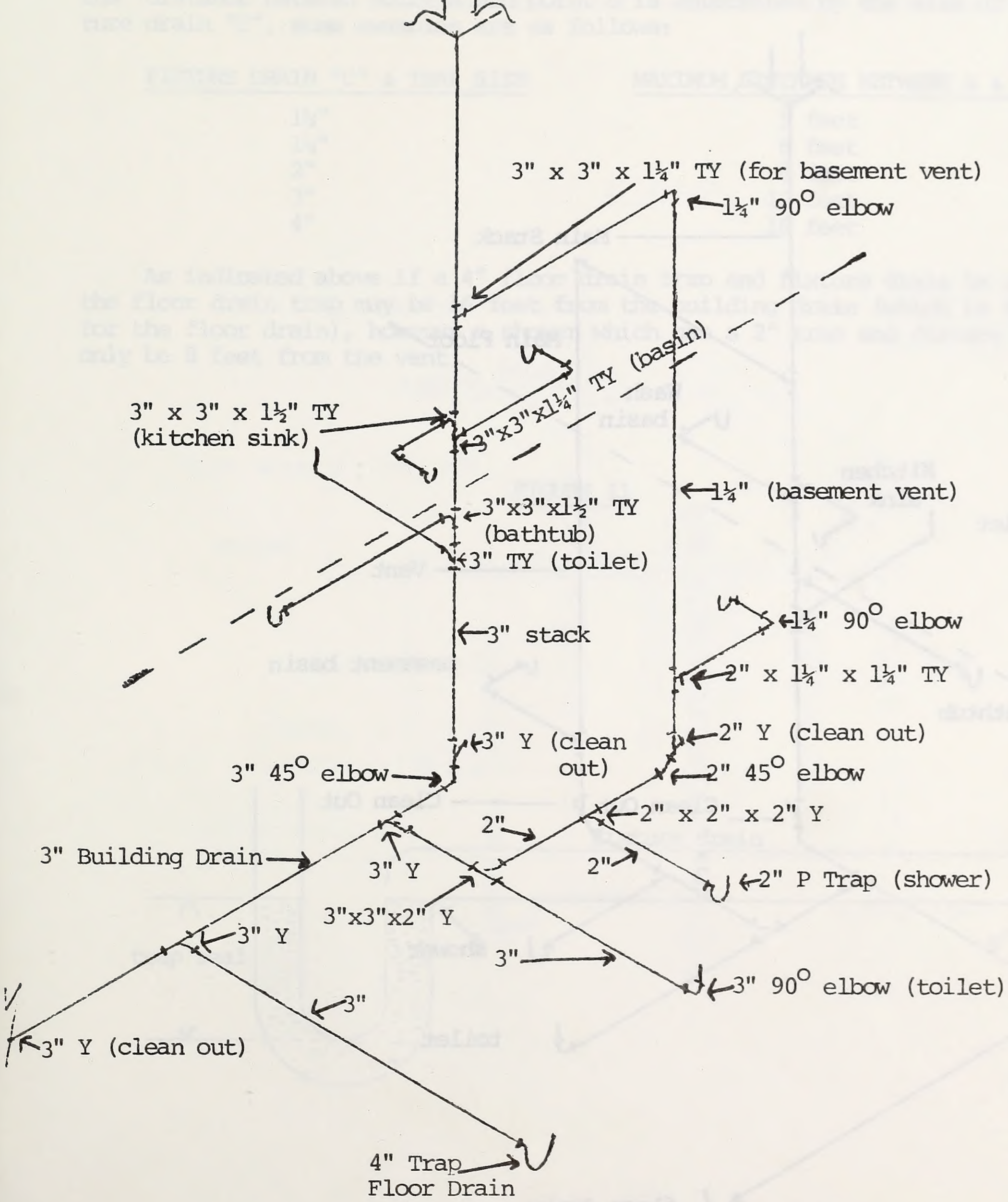
**NOTE: When cutting holes in either plates or studs to accomodate the waste piping, stacks, vents etc. and also for water piping, care should be taken to insure that the holes are large enough to allow free movement of the piping due to expansion and contraction.

FIGURE 8


4" x 3" roof increaser
Flashing
3" x 3" x 1¼" TY For basement vent connection
3" x 3" x 1¼" TY for Basin
3" x 3" x 1½" for kitchen sink
3" x 3" x 1½" Ty for bathtub
3" x 3" x 3" TY for toilet
3" Expansion Joint
Clean Out

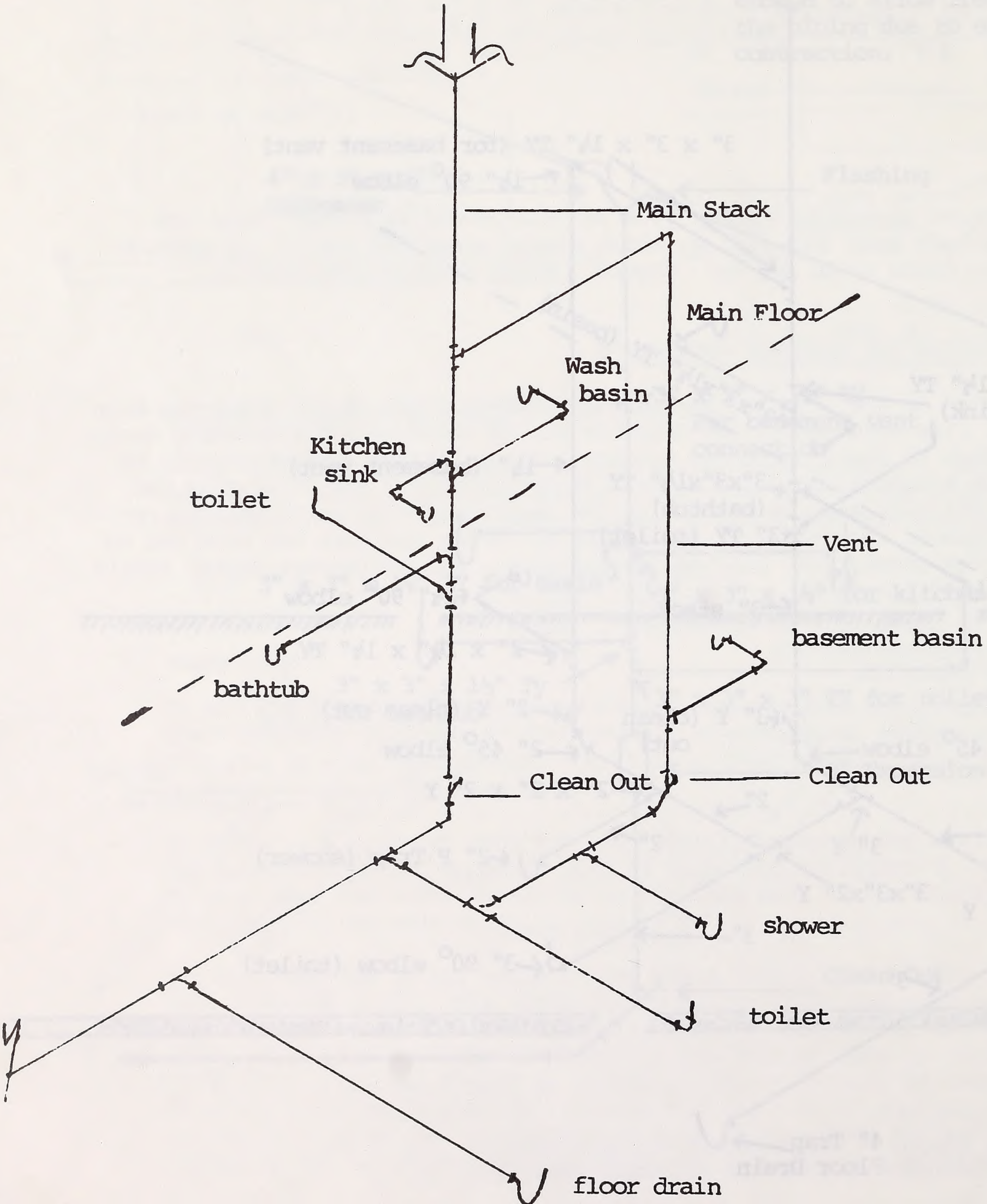
The fittings required for completing the ground work and the stack are indicated in Figure 9.

FIGURE 9



The completed rough in for the house should resemble figure 10.

FIGURE 10



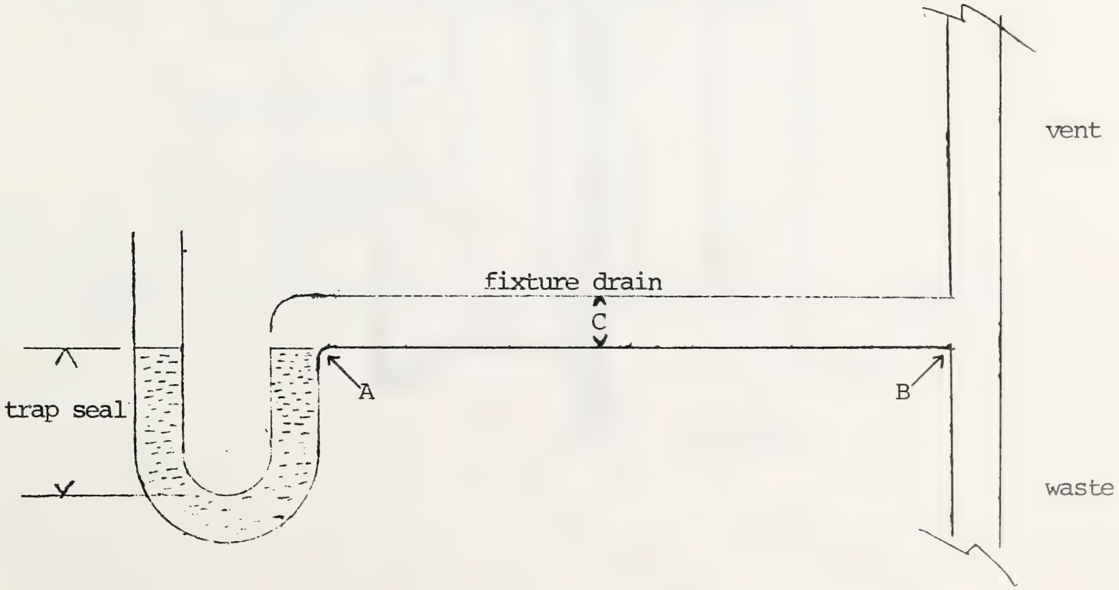
It should be remembered that when plumbing is installed all fixtures must be supplied with a "trap", the purpose of which is to prevent sewer gas from gaining access to the building through the fixture. It is, therefor important to maintain the trap seals, (figure 11). In order to accomplish this "S" traps and partial "S" traps must be avoided, by insuring that the slope of the fixture drain never exceeds the pipe diameter.

For example in figure 11 if the fixture drain "C" is 1½" in diameter, the grade or slope from point A to point B must not exceed 1½", consequently in order to maintain a slope of ¼" per foot on the fixture drain and still not exceed the pipe diameter of 1½", the distance between point A and point B must not exceed 6 feet. This principle applies to all traps and fixture drains ie: the "distance between point A and point B is determined by the size of the fixture drain "C", some examples are as follows:

FIXTURE DRAIN "C" & TRAP SIZE	MAXIMUM DISTANCE BETWEEN A & B
1¼"	5 feet
1½"	6 feet
2"	8 feet
3"	12 feet
4"	16 feet

As indicated above if a 4" floor drain trap and fixture drain is installed, the floor drain trap may be 16 feet from the building drain (which is the vent for the floor drain), however a shower which has a 2" trap and fixture drain may only be 8 feet from the vent.

FIGURE 11

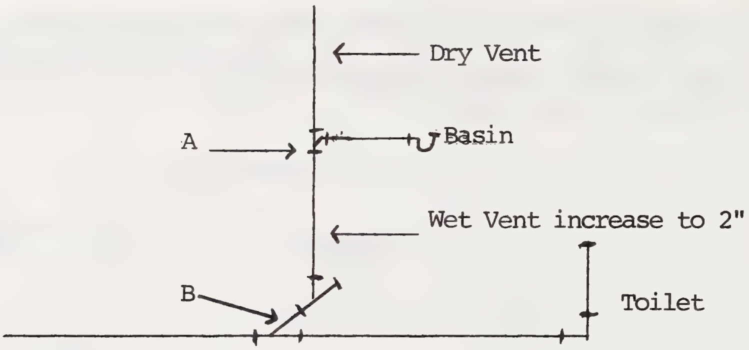


VENTING

There are two kinds of vents in a plumbing system, "wet vents", as described in Figure 2 "E", and "dry vents". Dry vents only conduct air, while wet vents conduct both water and air. It is quite permissible to use one fixture waste pipe as a vent for another fixture, provided a few simple rules are followed, ie: the fixture waste pipe which is to be used as a vent pipe must be increased in size and all fixtures must be on the same floor. Figure 12 illustrates a typical wet vent, from point "A" to point "B".

As can be seen the waste for the basin is being used as a vent for the toilet. Normally a basin waste size can be "1¼"" however, as indicated by the illustration in figure 12 it must be increased to 2" because it is being used as a waste for the basin and also as a vent for the toilet. Figure 10 shows both the toilet and shower in the basement are wet vented through the basin.

FIGURE 12



FRAMING & BACKING

A certain amount of framing and backing is required for the plumbing system, the bathtub usually centres on a stud. Therefor it is necessary to "header" the stud at about 25" above the bottom plate and insert backing for the tub fillers as illustrated in figure 13.

FIGURE 13

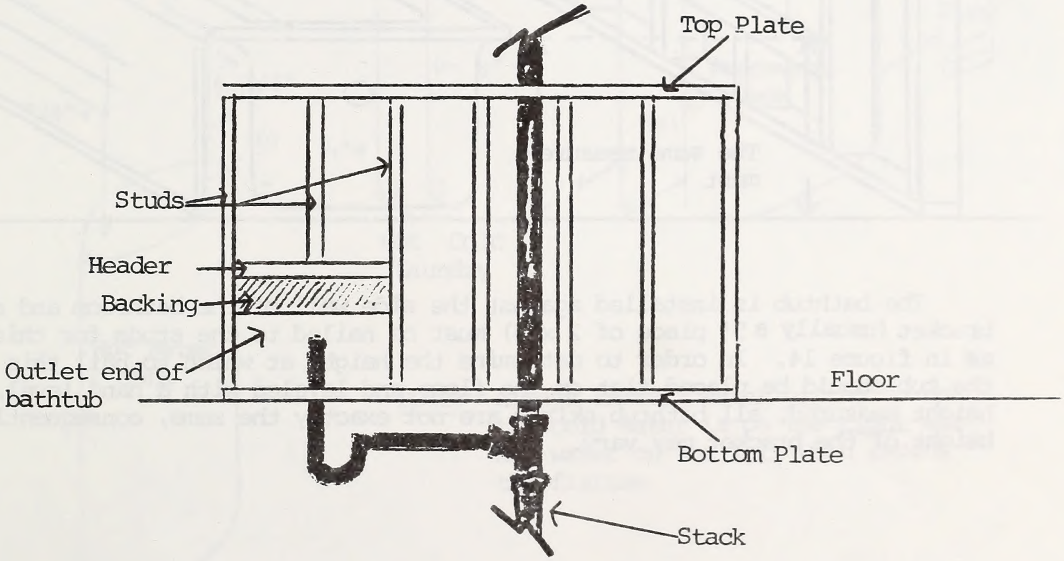
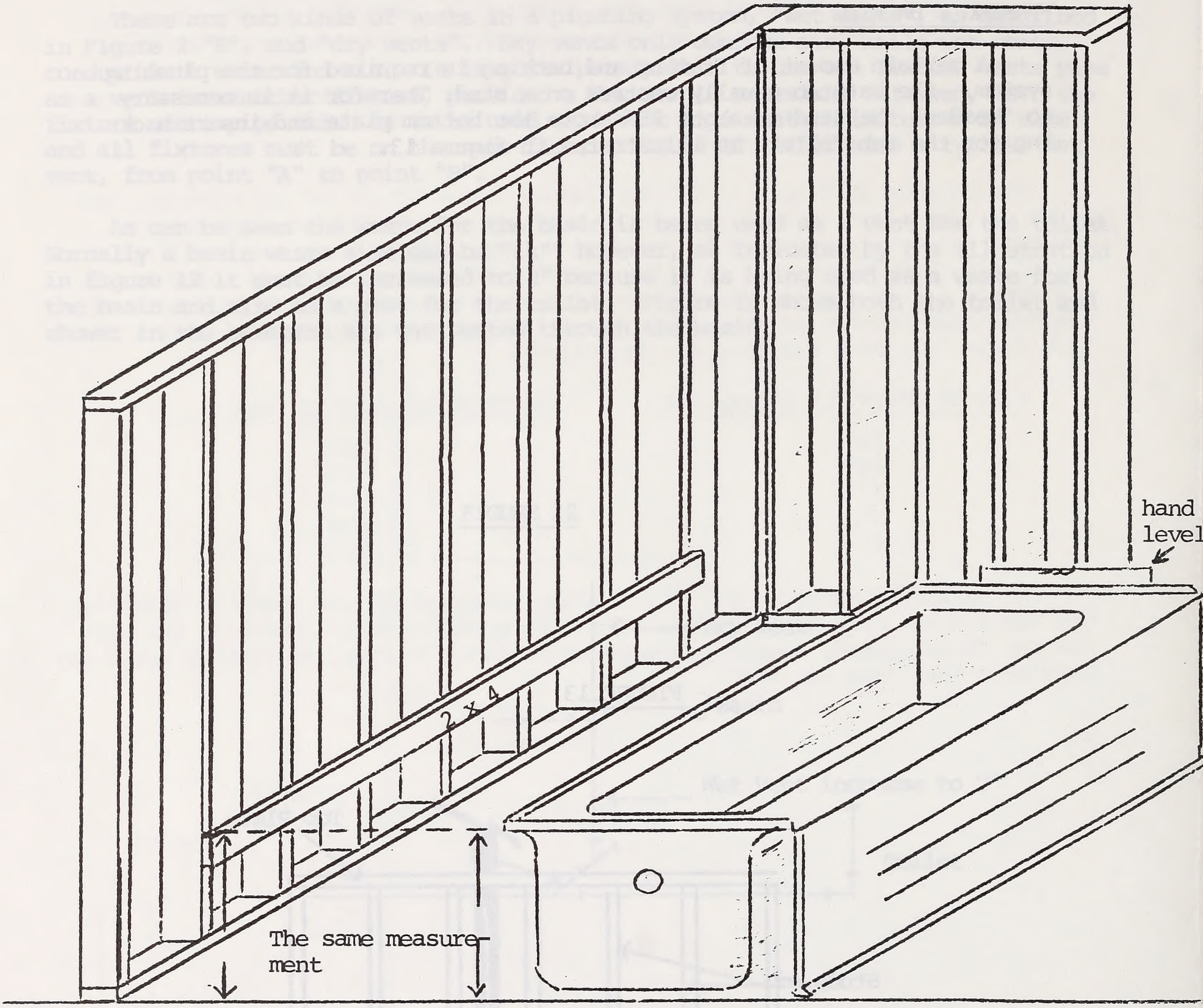


FIGURE 14



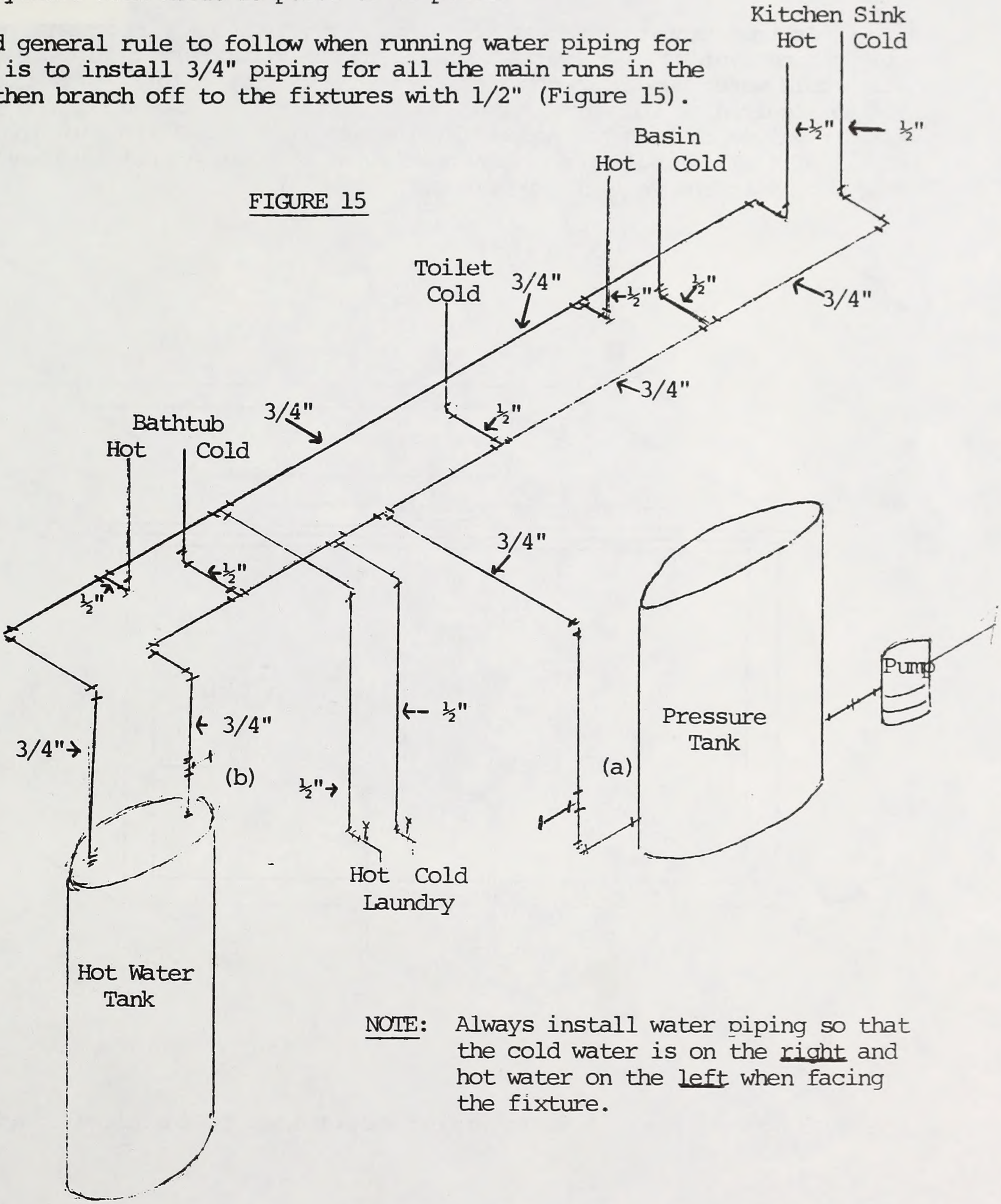
The bathtub is installed against the side wall of the bathroom and a support bracket (usually a 5' piece of 2 x 4) must be nailed to the studs for this purpose as in figure 14. In order to determine the height at which to nail this bracket, the tub should be placed flat on the floor and leveled with a hand level, then the height measured, all bathtub skirts are not exactly the same, consequently the height of the bracket may vary.

WATER PIPING

It is important to insure an adequate water supply to all fixtures in a plumbing system. Adequate supply is determined by water pressure, water pipe sizing and the length of the water piping. When a pressure system is involved the usual pressure setting on the pump is from 20 p.s.i to 40 p.s.i. A municipal or public water system may vary anywhere from about 25 p.s.i to 75 p.s.i.

A good general rule to follow when running water piping for a dwelling is to install 3/4" piping for all the main runs in the house and then branch off to the fixtures with 1/2" (Figure 15).

FIGURE 15



NOTE: Always install water piping so that the cold water is on the right and hot water on the left when facing the fixture.

The piping for the plumbing fixture should be stubbed down between the wall studs into the basement before the walls are finished or dry walled. The water piping can then be completed at any time. If there are to be long runs of water piping in the house it may be advisable to install air cushions at the ends of the longer runs (Figure 16).

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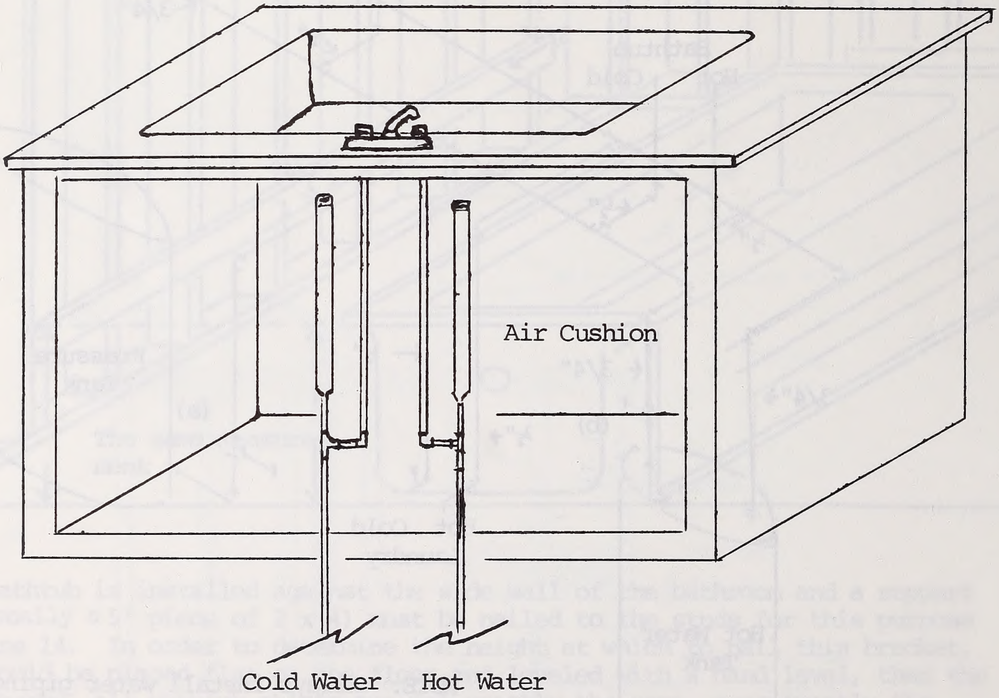
VALVES

It is important to remember that shut off valves are a necessary part of the water piping system. A valve is required on the water service (Figure 15(a)) and on the cold water supply to the hot water tank (Figure 15(b)). A shut off valve is also required on the water supply to the toilet. It is a good idea to install shut off valves on both hot and cold water supplies to all the plumbing fixtures, as this will allow isolation of any aprticular fixture without interupting the water supply to the rest of the house.

FIGURE 16



NOTE: To prevent freezing water piping should never be installed in an outside wall.